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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------------------|-------------|----------------------|---------------------|-------------------|
| 10/644,570 | 08/20/2003 | Aaron Fisher | TNT-114US | 6637 |
| 23122 | 7590 | 09/09/2005 | EXAMINER | |
| RATNERPRESTIA | | | | HUGHES, DEANDRA M |
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| VALLEY FORGE, PA 19482-0980 | | | | |
| ART UNIT | | PAPER NUMBER | | |
| | | 3663 | | |

DATE MAILED: 09/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|------------------------|---------------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 10/644,570 | FISHER, AARON |
| | Examiner | Art Unit |
| | Deandra M. Hughes | 3663 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 26 April 2005.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-22 is/are pending in the application.
4a) Of the above claim(s) 8-22 is/are withdrawn from consideration.
5) Claim(s) _____ is/are allowed.
6) Claim(s) 1 and 2 is/are rejected.
7) Claim(s) 3-7 is/are objected to.
8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 20 August 2003 is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a))

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)
2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 8/20/03

4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) Notice of Informal Patent Application (PTO-152)

6) Other: _____ .

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-12, drawn to an amplified laser with a particular current control structure, classified in class 372, subclass 46.01.
 - II. Claims 13-20, drawn to a monolithic integrated laser with a diffraction grating, classified in class 372, subclass 50.11.
 - III. Claims 21-22, drawn to a method of processing a monolithic semiconductor device emissive of an optical signal with an optical grating structure, classified in class 438, subclass 32.

2. If applicant elects **Invention I**, then an additional species election is required.

Invention I contains claims directed to the following patentably distinct species of the claimed invention:

(Species I-A) An amplified laser with a parallel circuit connection for drive current (figs. 1B, 3A, and 3B)

(Species I-B) An amplified laser with a series circuit connection for drive current (figs. 1A, 2A, and 2B)

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claims 1-3 are generic to **Invention I**.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim

is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

3. Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention II has separate utility such as hybrid integration with passive planar waveguides. See MPEP § 806.05(d).

4. Inventions III and I are related as process of making and product made, respectively. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the process as claimed can

be used to make a materially different product. In particular, the process as claimed can be used to make a monolithically integrated semiconductor laser with a diffraction grating layer.

5. Inventions III and II are related as process of making and product made, respectively. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the claimed can be used to make other and materially different product. In particular, the process as claimed can be used to make a VCSEL.

6. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

7. During a telephone conversation with Kenneth Nigon on 8/29/05 a provisional election was made without traverse to prosecute the claims 1-7 which read on Species I-A. Affirmation of this election must be made by applicant in replying to this Office action. Claims 8-22 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

The inventions are distinct, each from the other because of the following reasons:

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1-2 rejected under 35 U.S.C. 102(b) as being anticipated by Yokoyama (US 6,323,507 published Sep. 3, 2002).

**The references made herein are done so for the convenience of the applicant.

They are in no way intended to be limiting. The prior art should be considered in its entirety.

With regard to claim 1, Abeles discloses:

- a substrate (fig. 4; #305);
- a SOA (#304) coupled to the substrate and including the amplifier anode (#333) electrode and an amplifier cathode (#333) electrode;
- a semiconductor laser (#301), coupled to the substrate and including a semiconductor laser anode electrode (#331) and a semiconductor laser cathode electrode (#330), wherein:
 - the semiconductor laser and the SOA are configured on the substrate so that the laser is optically coupled to the SOA (fig. 3, #306); and
 - at least one of the semiconductor laser anode electrode and semiconductor laser cathode (#330) is electrically coupled to at least one of the amplifier anode electrode and amplifier cathode (#330; col. 5, lines 5-10) *to receive operational power.*

The Examiner considers the claim language identified in italics above to be a functional limitation, i.e. intended use. While features of an apparatus may be recited

either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function alone. Since the structural limitations have been met by the prior art, the Examiner has reason to believe that the function limitation can be performed by the prior art structure. See MPEP 2114.

With regard to claim 2, fig. 3 is the package. Further, electrical contacts would inherently be included in the packaging. Otherwise, there would be no means by which one could permit current to flow through the device.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yokoyama, fig. 15 in view of Yokoyama, col. 20, lines 20-25.

With regard to claim 1, Yokoyama discloses:

- a substrate (fig. 16A; #2);
- an optical waveguide (fig. 15, #78) coupled to the substrate and including the amplifier anode (#15) electrode and an amplifier cathode (#16) electrode;
- a semiconductor laser (#1), coupled to the substrate and including a semiconductor laser anode electrode (#15) and a semiconductor laser cathode electrode (#16), wherein:

- the semiconductor laser and the waveguide are configured on the substrate so that the laser is optically coupled to the waveguide (#1 and #78 are coupled); and
- at least one of the semiconductor laser anode electrode and semiconductor laser cathode (#15) is electrically coupled to at least one of the waveguide anode electrode and amplifier cathode (#16; col. 18, lines 64-65) to receive operational power.

Yokoyama, fig. 15 does not disclose that the waveguide is an SOA. However, Yokoyama states later in the Patent (col. 20, lines 20-25) that “although the laser element is combined with an optical modulator or an optical waveguide, it may be combined with any other optical element, such as a semiconductor optical switch and a semiconductor optical amplifier.”

Allowable Subject Matter

12. Claims 3-7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

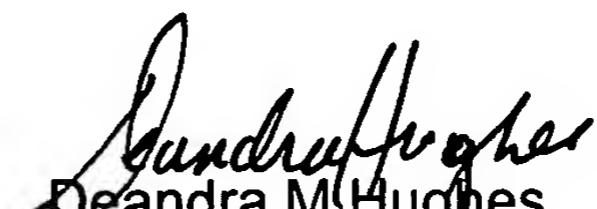
13. The following is a statement of reasons for the indication of allowable subject matter. With regard to claim 3, the prior art does not teach or make obvious *an optical modulator optically coupled to the SOA, the optical modulator being electrically coupled to a seventh electrical contact of the EML package* in conjunction with the other features of the claim.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Broutin and Crowder disclose thermo-electric coolers for semiconductor optical devices. Botez and Tamanuki disclose MOPAs.
15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deandra M. Hughes whose telephone number is 571-272-6982. The examiner can normally be reached on M-F, 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on 571-272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Deandra M. Hughes
Examiner
Art Unit 3663